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Applicants: Jan Lindskog, *et al.*

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Customer No.: 27045

For: Method for Power Save

Group Art Unit: 2643

Examiner: Matthew C. Sams

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Date: January 19, 2006

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APPEAL UNDER 35 U.S.C. §134

This Brief is submitted in connection with the decision of the Primary Examiner set forth in Final Official Action dated July 27, 2005, finally rejecting claims 1, 3, 5, 7, 8 and 10-25, which are all of the pending claims in the application. The Applicants have cancelled claim 17, herein, and prosecute this appeal with respect to the rejection of all remaining claims.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §41.20(b)(2) that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1379.

Real Party in Interest

The real party in interest, by assignment, is: Telefonaktiebolaget LM Ericsson (publ)
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Related Appeals and Interferences

None.

Status of Claims

Claims 1, 3, 5, 7, 8, 10-16 and 18-25 are pending in the present application¹, each of which are finally rejected and form the basis for this Appeal. Claims 1, 7, 11 and 13-16 stand rejected, under 35 U.S.C. §103(a), as being unpatentable over Beach (US 6,067,297) in view of Larsson, *et al.* (US 6,463,307); claims 3, 10, 12, 18 and 23 as being unpatentable over Beach in view of van Bokhorst, *et al.* (US 6,192,230); and claims 5, 8, 19-22, 24 and 25 as being unpatentable over the combination of Beach in view of van Bokhorst and further in view of Chen, *et al.* (US 5,502,724). Claims 1, 3, 5, 7, 8, 10-16 and 18-25, including all prior amendments to the claims, are attached in the Claims Appendix.

Status of Amendments

The claims set out in the Claims Appendix include all entered amendments, with the exception of claim 17, which has been cancelled by Applicant herein.

Summary of Claimed Subject Matter**Claim 1**

Claim Element	Specification Reference
Method for power saving in a mobile terminal comprising a wireless Network Interface Card (NIC) for accessing a wireless LAN (WLAN) having an access point (AP), wherein the WLAN uses HIPERLAN Type 2 or IEEE 802.11 power save procedures and wherein the mobile terminal uses an operating system supporting a plurality of device power states said method comprising the steps of:	See page 1 to page 6, line 10.
the mobile terminal requesting a transition from an active state to a less active state;	Page 8, lines 14-19. Fig. 2
upon which request the NIC requests	Page 8, line 19-21. Fig. 2

¹ The Applicants have cancelled claim 17 in presenting this appeal.

the AP to be entered into WLAN sleep state; and,	
on acknowledgement from the AP the mobile terminal enters WLAN sleep state.	Page 4 line 26 Fig. 2

Claim 3

Claim Element	Specification Reference
Method for power saving in a mobile terminal comprising a wireless Network Interface Card (NIC) for accessing a wireless LAN (WLAN) in an ad hoc network, wherein the WLAN uses HIPERLAN Type 2 or IEEE 802.11 power save procedures and wherein the mobile terminal uses an operating system supporting a plurality of device power states, said method comprising the steps of:	See page 1 to page 6, line 10.
the mobile terminal requesting a transition from an active state to a less active state;	Page 8, lines 14-19, Fig. 2
upon which request the NIC requests a second mobile terminal in the ad hoc network to be entered into WLAN sleep state; and,	Page 4, lines 14-19, Fig. 2
on acknowledgement from the second mobile terminal the mobile terminal enters WLAN sleep state.	Page 4, lines 20, Fig. 2
Claim Element	Specification Reference
Method for power saving in a mobile terminal comprising a wireless Network Interface Card (NIC) for accessing a wireless LAN (WLAN), having an access point (AP) wherein the WLAN uses HIPERLAN Type 2 or IEEE 802.11 power save procedures and wherein the mobile terminal uses an operating system supporting a plurality of device power states, said method comprising the steps of:	See page 1 to page 6, line 10.
the mobile terminal, due to inactivity, requests a transition from an active state to a less active state;	Page 8, lines 14-19
upon which request the mobile terminal requests the AP to be disassociated or de-authenticated from the AP; and,	Page 12, lines 16-20

Claim 8

Claim Element	Specification Reference
Method for power saving in a mobile terminal comprising a wireless Network Interface Card (NIC) for accessing a wireless LAN (WLAN) in an ad hoc network, wherein the WLAN uses HIPERLAN Type 2 or IEEE 802.11 power save procedures and wherein the mobile terminal uses an operating system supporting a plurality of device power states, said method comprising the steps of:	See page 1 to page 6, line 10.
the mobile terminal, due to inactivity, requests a transition from an active state to a less active state;	Page 8, lines 14-19, The term Mobile Terminal refers to both the wireless Network Interface Card NIC and the PC, Page 1 lines 14-15
upon which request the mobile terminal requests a second mobile terminal in the ad hoc network to be disassociated or de-authenticated from the ad hoc network; and,	Page 12, 17-19 The term Mobile Terminal refers to both the wireless Network Interface Card NIC and the PC, Page 1 lines 14-15
on acknowledgement from the second mobile terminal, the mobile terminal enters a disassociated or de-authenticated state.	Page 12, 17-19

Claim 13

Claim Element	Specification Reference
Method for power saving in a mobile terminal comprising a wireless Network Interface Card (NIC) for accessing a wireless LAN (WLAN) having an access point (AP), wherein the WLAN uses HIPERLAN Type 2 or IEEE 802.11 power save procedures and wherein the mobile terminal uses an operating system supporting a plurality of device power states, said method comprising the step of:	See page 1 to page 6, line 10.
the mobile terminal forcing the NIC down to a less active state at a point of time later than a time-out interval due to inactivity as defined in said power save procedures in order to lower the system state.	page 13, lines 18-19

Claim 18

Claim Element	Specification Reference
Method for power control in a mobile terminal comprising a wireless Network Interface Card (NIC) for accessing a wireless LAN (WLAN) in an ad hoc network, said network comprising at least a second mobile terminal, wherein the WLAN uses HIPERLAN Type 2 or IEEE 802.11 power save procedures and wherein the mobile terminal uses an operating system supporting a plurality of device power states, said method comprising the steps of:	See page 1 to page 6, line 10.
the mobile terminal, in a low power mode, requests transition to an active state;	Page 9, 14-16
upon which request the NIC requests the second mobile terminal to be entered into WLAN active state; and,	The alternatives below are given for an infrastructure access point AP with mobile terminals in WLAN sleep state, but they are also applicable for an ad-hoc network. Page 10 line5
the mobile terminal enters the WLAN active state on acknowledgement from the second terminal.	Page 11, 1-5

The specification references listed above are provided solely to comply with the USPTO's current regulations regarding appeal briefs. The use of such references should not be interpreted to limit the scope of the claims to such references, nor to limit the scope of the claimed invention in any manner.

Grounds of Rejection to be Reviewed on Appeal

- 1.) Claims 1, 7, 11 and 13-16, stand rejected, under 35 U.S.C. §103(a), as being unpatentable over Beach in view of Larsson;
- 2.) Claims 3, 10, 12, 18 and 23 stand rejected as being unpatentable over Beach in view of van Bokhorst; and,
- 3.) Claims 5, 8, 19-22, 24 and 25 stand rejected as being unpatentable over the combination of Beach in view of van Bokhorst and further in view of Chen.

Argument

1.) Claim Rejections – 35 U.S.C. §103(a)

The Examiner rejected claims 1, 7, 11 and 13-16 as being unpatentable over Beach in view of Larsson; claims 3, 10, 12, 18 and 23 over Beach in view of van Bokhorst; and claims 5, 8, 19-22, 24 and 25 over the combination of Beach in view of van Bokhorst and further in view of Chen. The Applicants traverse the rejections.

In rejecting claim 1, it appears that the Examiner has found certain similar claim elements in the reference patents, but those patents are not directed to the problem addressed by the Applicants' invention. Beach does not address the problems described in the Applicants disclosure regarding the power states of a mobile terminal and a NIC therein. The problem according to the Applicants' invention concerns the cooperation between a mobile terminal and its NIC, wherein the power states of the mobile terminal and NIC may interact and prohibit a lower power status of one depending on the status of the other. An interesting aspect of Applicants' invention is that both the mobile terminal and the NIC can enter power save states; *i.e.*, it is not only the mobile terminal itself that can power down.

The teachings of Beach relate to a WLAN, using the IEEE 803.2 protocol; specifically, the protocol aspects regarding frequency hopping, especially frequency hopping spread spectrum communication. The mobile units may operate in two power management modes, either continuously awake mode (CAM) or power save polling (PSP) mode. In contrast, the Applicants' invention sends requests between the devices to find out the devices power states. That knowledge allows the apparatus to shut down as low as possible in the different parts (mobile terminal and NIC). To overcome the deficiencies of Beach, the Examiner looks to the teachings of Larson.

The teachings of Larson relate to the interaction between a terminal and a base station, and the hibernation state of the terminal and the ability to decide during hibernation whether a packet is waiting to be sent. Larson essentially discloses:

1. An awake terminal sends hibernation request to base station; and,
2. the base station sends instructions with time intervals when base station should listen;

and,

1. Base station decides while in hibernating mode that it has a package to send; and,
2. the base station awakes itself and sends capacity request signal to initiate transfer of packet.

Those teachings of Larson do not deal with deciding if a change of power status is possible as is the problem addressed by Applicants' invention. In rejecting Applicant's invention, the Examiner has impermissibly used hindsight by reading back into the prior art the teachings of Applicant's own disclosure. The Examiner has used Applicants' claims as a blueprint to pick and chose elements from the prior art similar to Applicants' individual claim limitations, without regard to the manner in which those limitations have been combined by Applicant to effect a novel and useful improvement to the state of the art. Various bits of data or teachings of the prior art are not properly combined unless there is something in the prior art itself that suggests that those teachings could or should be combined. Both the suggestion for combining teachings to make the invention and its reasonable likelihood of success "must be founded in the prior art, not in the applicant's disclosure." *In re Dow Chem.* 837 F.2d 469, 473 (Fed. Cir. 1988). Because the Examiner has failed to meet that burden, he has failed to establish a *prima facie* case of obviousness and, therefore, claim 1 should be allowed.

For the same reasons, the Examiner has failed to establish a *prima facie* case of obviousness of independent claims 3, 5, 8, 13 and 18. Furthermore, whereas claims 7, 11 and 16 are dependent from claim 1; claims 10, 12 and 23 are dependent from claim 3; claims 19, 21 and 24 are dependent from claim 5; claims 20, 22 and 25 are dependent from claim 8; and claims 14 and 15 are dependent from claim 13, and include the limitations of their respective base claims, those claims are also not obvious in view of Beach, Larsson, van Bokhorst, or Chen, either individually or in combination.

In rejecting these arguments in the Final Office Action, the Examiner asserts that "[s]ince the base station knows when the mobile terminal will be listening for a paging message, the base station has entered into a power saving mode by not trying to contact the mobile terminal until the specified time." This assertion is unfounded. First of all, the Applicants' invention is directed to cooperation between a mobile terminal and its NIC in managing their power states – not the power state of a base station. Furthermore, the Examiner's statement as to the power saving mode of a base station

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is not necessarily true because a base typically services multiple terminals and, therefore, typically does not go into a power saving mode simply because it know when one terminal will be listening for a paging message. Such a configuration of a base station would likely only make sense if all terminals would be listening for paging messages at approximately the same time; otherwise, the base station would be repeatedly entering and exiting a power save state to service different terminals.

Secondly, the Examiner states that the features upon which the Applicants rely ("sending requests between the devices to find out the devices power states") are not recited in the rejected claims. This is incorrect. It is inherent in the claims that such requests are transmitted between devices. For example, claim 1 recites "the mobile terminal requesting a transition from an active state to a less active state; upon which request the NIC requests the AP to be entered into WLAN sleep state; and, on acknowledgement from the AP the mobile terminal enters WLAN sleep state." If the mobile terminal requests a transition in power state, and the NIC, upon that request, requests the AP to be entered into a sleep state, it is inherent that a request is transmitted between the mobile terminal and the NIC, and the NIC and AP.

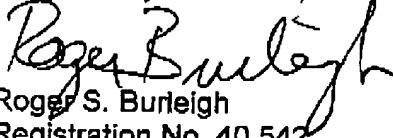
For these reasons, the Examiner has failed to establish a *prima facie* case for rejection of the claims.

* * *

CONCLUSION

The claims currently pending in the application are patentable over the cited references, and the Applicants request that the Examiner's rejection thereof be reversed and the application be remanded for further prosecution.

Respectfully submitted,


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APPENDIX**Pending Claims**

1. (Previously Presented) Method for power saving in a mobile terminal comprising a wireless Network Interface Card (NIC) for accessing a wireless LAN (WLAN) having an access point (AP), wherein the WLAN uses HIPERLAN Type 2 or IEEE 802.11 power save procedures and wherein the mobile terminal uses an operating system supporting a plurality of device power states said method comprising the steps of:

the mobile terminal requesting a transition from an active state to a less active state;

upon which request the NIC requests the AP to be entered into WLAN sleep state; and,

on acknowledgement from the AP the mobile terminal enters WLAN sleep state.

2. (Cancelled)

3. (Previously Presented) Method for power saving in a mobile terminal comprising a wireless Network Interface Card (NIC) for accessing a wireless LAN (WLAN) in an ad hoc network, wherein the WLAN uses HIPERLAN Type 2 or IEEE 802.11 power save procedures and wherein the mobile terminal uses an operating system supporting a plurality of device power states, said method comprising the steps of:

the mobile terminal requesting a transition from an active state to a less active state;

upon which request the NIC requests a second mobile terminal in the ad hoc network to be entered into WLAN sleep state; and,

on acknowledgement from the second mobile terminal the mobile terminal enters WLAN sleep state.

4. (Cancelled)

5. (Previously Presented) Method for power saving in a mobile terminal comprising a wireless Network Interface Card (NIC) for accessing a wireless LAN (WLAN), having an access point (AP) wherein the WLAN uses HIPERLAN Type 2 or IEEE 802.11 power save procedures and wherein the mobile terminal uses an operating system supporting a plurality of device power states, said method comprising the steps of:

the mobile terminal, due to inactivity, requests a transition from an active state to a less active state;

upon which request the mobile terminal requests the AP to be disassociated or de-authenticated from the AP; and,

on acknowledgement from the AP, the mobile terminal enters a disassociated or de-authenticated state.

6. (Cancelled)

7. (Previously Presented) Method according to claim 1 in which the mobile terminal is disassociated or de-authenticated from the AP without using a disassociation or de-authentication signal.

8. (Previously Presented) Method for power saving in a mobile terminal comprising a wireless Network Interface Card (NIC) for accessing a wireless LAN (WLAN) in an ad hoc network, wherein the WLAN uses HIPERLAN Type 2 or IEEE 802.11 power save procedures and wherein the mobile terminal uses an operating system supporting a plurality of device power states, said method comprising the steps of:

the mobile terminal, due to inactivity, requests a transition from an active state to a less active state;

upon which request the mobile terminal requests a second mobile terminal in the ad hoc network to be disassociated or de-authenticated from the ad hoc network; and,

on acknowledgement from the second mobile terminal, the mobile terminal enters a disassociated or de-authenticated state.

9. (Cancelled)

10. (Previously Presented) Method according to claim 3 in which the mobile terminal is disassociated or de-authenticated from the ad hoc network without using a disassociation or de-authentication signal.

11. (Previously Presented) Method according to claim 1 in which the mobile terminal associates or authenticates to the AP on transition from a less active state to a more active state.

12. (Previously Presented) Method according to claim 3 in which the mobile terminal joins an ad hoc network by associating or authenticating to the ad hoc network on transition from a less active state to a more active state.

13. (Previously Presented) Method for power saving in a mobile terminal comprising a wireless Network Interface Card (NIC) for accessing a wireless LAN (WLAN) having an access point (AP), wherein the WLAN uses HIPERLAN Type 2 or IEEE 802.11 power save procedures and wherein the mobile terminal uses an operating system supporting a plurality of device power states, said method comprising the step of:

the mobile terminal forcing the NIC down to a less active state at a point of time later than a time-out interval due to inactivity as defined in said power save procedures in order to lower the system state.

14. (Original) Method for power saving according to claim 13, in which the method also comprises the step of the mobile terminal forcing the NIC from D3 cold or D3 initialise to a higher power state, when activity is detected or when data is pending for transmission.

15. (Original) Method according to claim 13 in which a timer in the mobile terminal is used to initiate the mobile terminal to power down the NIC.

16. (Original) Method according to claim 1 in which the NIC enters its lowest power consumption mode.

17. (Cancelled)

18. (Previously Presented) Method for power control in a mobile terminal comprising a wireless Network Interface Card (NIC) for accessing a wireless LAN (WLAN) in an ad hoc network, said network comprising at least a second mobile terminal, wherein the WLAN uses HIPERLAN Type 2 or IEEE 802.11 power save procedures and wherein the mobile terminal uses an operating system supporting a plurality of device power states, said method comprising the steps of:

the mobile terminal, in a low power mode, requests transition to an active state;
upon which request the NIC requests the second mobile terminal to be entered into WLAN active state; and,

the mobile terminal enters the WLAN active state on acknowledgement from the second terminal.

19. (Previously Presented) Method according to claim 5 in which the mobile terminal is disassociated or de-authenticated from the AP without using a disassociation or de-authentication signal.

20. (Previously Presented) Method according to claim 8 in which the mobile terminal is disassociated or de-authenticated from the ad hoc network without using a disassociation or de-authentication signal.

21. (Previously Presented) Method according to claim 5 in which the mobile terminal associates or authenticates to the AP on transition from a less active state to a more active state.

22. (Previously Presented) Method according to claim 8 in which the mobile terminal joins an ad hoc network by associating or authenticating to the ad hoc network on transition from a less active state to a more active state.

23. (Original) Method according to claim 3 in which the NIC enters its lowest power consumption mode.

24. (Original) Method according to claim 5 in which the NIC enters its lowest power consumption mode.

25. (Original) Method according to claim 8 in which the NIC enters its lowest power consumption mode.

* * *

APPENDIX

Evidence Appendix

NONE

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APPENDIX

Related Proceedings Appendix

NONE

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